

## REMARKS

Previously, claims 1-15 were pending and under consideration. In the present paper, claims 1-4 and 6-13 are amended. Claims 5, 14, and 15 are canceled without prejudice to Applicant's rights to pursue the canceled subject matter in one or more applications. Thus, following entry of the present amendment, claims 1-4 and 6-13 remain pending and under consideration.

The PTO's rejections to the pending claims are addressed below.

### **I. The Amendments to the Claims**

In the present paper, claims 1-4 and 6-13 are amended. As the amendments to the claims are fully supported by the application as filed, no new matter is presented by the present amendments to the claims.

Claims 1 and 8-13 are amended to delete substance P. Specific support for the amendments to claims 1 and 8-13 may be found, for example, in the specification at pages 4-5, paragraphs [19] to [21], as originally filed.

Claims 2-4 and 7-10 are amended to clarify recited subject matter or correct grammatical inaccuracies and do not alter the scope of these claims. Specific support for the amendments to claims 2-4 and 7-10 may be found, for example, in the specification at page 3, paragraph [10], as originally filed. Claim 6 has been amended in its dependency to refer to claim 1, which recites antecedent for terms recited in claim 6.

As the amendments to the claims are fully supported by the application as filed, they present no new matter. Accordingly, entry of the present amendments to the claims is hereby respectfully requested under 37 C.F.R. § 1.111.

### **II. The Rejection of Claims 1-4, 7, 11, and 13-14 as Anticipated Should Be Withdrawn**

Claims 1-4, 7, 11, and 13-14 are rejected under 35 U.S.C § 102(b) as allegedly anticipated over Li *et al.* (U.S. Patent No. 5,830,177).

In particular, the PTO alleges that Li *et al.* teaches that substance P is known to stimulate hair growth and that aerosol administration, as well as topical and transdermal routes of administration, are known as means to administer hair loss products. *See* Office Action, at pp. 2-3. Without acquiescing to the propriety of the rejection, and solely to expedite prosecution, Applicants have amended claims 1, 11 and 13 to delete substance P and canceled claim 14, without prejudice to Applicant's rights to pursue the canceled subject

matter in one or more applications. As such, Applicant respectfully submits that *Li et al.* does not teach each and every element of claims 1, 11, 13 or any of the claims that depend directly or indirectly from claim 1, including claims 2-4 and 7. *See Verdegaal Bros. v. Union Oil Co.*, 2 U.S.P.Q.2d 1051, 1052-53 (Fed. Cir. 1987) (holding that to anticipate the claimed invention, a single reference must teach each and every element of the claims).

The Examiner further alleges with respect to claims 5 and 15 that any “bioactive analogue” is deemed to equally encompass substance P because no clear guidance is claimed as to what falls within the meaning of “analog”. *See* Office Action at p. 3. Applicant respectfully disagrees. The description provided in the specification unambiguously distinguishes substance P from its bioactive analogs. *See, e.g.*, specification at pages 4-5, paragraph [20]. Nonetheless, without acquiescing to the propriety of the rejection, and solely to expedite prosecution, Applicants have canceled claims 5 and 15, without prejudice to Applicant’s rights to pursue the canceled subject matter in one or more applications.. As such, Applicant respectfully submits that the rejection is moot.

Accordingly, Applicant respectfully requests the withdrawal of the rejection under 35 U.S.C § 102(a).

### **III. The Rejection of Claims 5-6, 8-10, and 15 as Obvious Should Be Withdrawn**

Claims 5-6, 8-10, and 15 are rejected under 35 U.S.C § 103(a) as allegedly obvious over *Li et al.* (U.S. Patent No. 5,830,177) in view of *Witten et al.* (U.S. Patent No. 5,945,508) or *Pallenberg et al.* (U.S. Patent No. 5,539,845 [sic]). Applicants respectfully disagree.

#### **A. Legal Standard**

In the context of claims to chemical compounds and their biological properties, the Federal Circuit has recently affirmed the requirement that obviousness based on structural similarity must be supported by “identification of some motivation that would have led one of ordinary skill in the art to select and then modify a known compound...in a particular way to achieve the claimed compound.” *Eisai Co. Ltd. v. Dr. Reddy’s Laboratories, Ltd.*, 533 F.3d 1353, 1357 (Fed. Cir. 2008); *Takeda Chemical Ind., Ltd. v. Alphapharm Pty., Ltd.*, 429 F.3d 1350, 1360 (Fed. Cir. 2007) (holding that compounds at issue are not *prima facie* obvious over a compound of similar structure because the prior art provided no motivation to modify that compound to arrive at the claimed compounds).

In *Eisai*, a case decided on July 21, 2008, the Federal Circuit held that claims to a specific compound, rabeprazole, were not obvious over the prior art’s teaching of a structurally similar compound, lansoprazole. *See Eisai*, 533 F.3d at 1359. Rabeprazole and

lansoprazole differ only at the 4-position, wherein rabeprazole has a 4-methoxypropoxy group and lansoprazole has a 4-trifluoroethoxy group. *See Id.* at 1357. The Court held that even though the prior art taught that lansoprazole had desirable chemical and biological properties and would therefore have been considered a candidate for a lead compound, there was no motivation to modify the structure of lansoprazole in the required way to arrive at rabeprazole. *See Id.* at 1358-9. Indeed, the Court emphasized that after the Supreme Court's decision in *KSR Int'l Co. v. Teleflex Inc.*, the prior art must provide some reason or motivation to make the necessary change in structure in order for a *prima facie* case of obviousness to be made. *Eisai* at 1358, *citing KSR Int'l Co. v. Teleflex Inc.* 127 S.Ct. 1727, 1742 (2007) (holding that it is necessary to "supply some reasons for narrowing the prior art universe to a 'finite number of identified, predictable solutions.'" )<sup>1</sup>. Thus, the Examiner is respectfully reminded that the current law of obviousness in cases concerning structurally similar compounds "requires a showing of 'adequate support in the prior art' for the change in structure." *Takeda*, 429 F.3d at 1356 (*quoting In re Grabiak*, 769 F.2d at 729).

**B. No Motivation Exists to Modify the Teachings of *Li et al.*, *Witten et al.*, or *Pallenberg et al.***

The instant claims are not obvious because the Examiner has not shown adequate support in the cited art for the selection of the specific compounds of the instant claims from the teachings of *Li et al.*, *Witten et al.*, or *Pallenberg et al.* *Li et al.* teaches the targeted delivery of beneficial agents into hair follicles with skin vibration. While acknowledging that *Li et al.* does not expressly teach use of bioactive analogs of substance P or micrometer ranges for aerosol administration of any analogs of substance P, the Examiner alleges that *Li et al.* teaches the use of substance P. *See* Office Action at 4. *Li et al.*, however, merely teaches that vibration of skin increases delivery of beneficial compounds. The mere mention of substance P, as one of many compounds that may stimulate hair growth, in a single line of the specification of *Li et al.*, which focuses on skin vibration, does not provide one of ordinary skill in the art any motivation to experiment with substance P analogs for the treatment of alopecia.

Moreover, in addition to being silent regarding bioactive analogs of substance P, *Li et al.* teaches that "preferred inhibitors of chemotherapy-induced alopecia are the p21 protein, cell cycle inhibitors, cell proliferation inhibitors, anti-androgen agents, inhibitors of

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<sup>1</sup> In *Takeda*, a post-*KSR* decision, the Federal Circuit also held that a structurally similar compound was not *prima facie* obvious because the prior art provide no motivation to make the specific change in structure. *Takeda Chemical Ind., Ltd. v. Alphapharm Pty., Ltd.*, 429 F.3d 1350 (Fed. Cir. 2007).

5- $\alpha$  reductase and a gene product of the multiple drug resistance (MDR) gene, preferably the p-glycoprotein expressed by the human MDR-1 gene.” Li *et al.* at col. 4, lines 50-56. While disclosing many compounds that are preferred in inhibiting alopecia, Li *et al.* does not identify substance P as a lead compound, which *Eisai* requires in establishing a *prima facie* case of obviousness. See *Eisai* at 1359 (“post-KSR, a *prima facie* case of obviousness for a chemical compound still, in general, begins with the reasoned identification of a lead compound”). Thus, Li *et al.* does not provide a “finite number of identified, predictable solutions,” but a “broad selection of compounds any of which could have been selected as the lead compound for further investigation.” *Takeda* 429 F.3d at 1356, 1359. Thus, from the teachings of Li *et al.*, one of ordinary skill in the art would have no motivation to modify substance P in the particular way required to arrive at the compounds of the instant claims. See *Eisai* at 1357. Because Li *et al.* does not provide this requisite motivation, a *prima facie* case of obviousness cannot be made. *Id.* at 8; see also *KSR*, 127 S.Ct. at 1742 (necessary to “supply some reasons for narrowing the prior art universe to a finite number of identified, predictable solutions.”).

Further, Witten *et al.* does not cure the defects of Li *et al.* The Examiner alleges that Witten *et al.* teaches use of the bioactive analogs of substance P, as well as the aerosol administration, including an amount of 1  $\mu$ M. See Office Action at p. 4. Witten *et al.*, however, does not teach or suggest alopecia or the treatment of alopecia, at all. While Witten *et al.* discloses bioactive analogs of substance P, Witten *et al.* provides no motivation to select these compounds, much less for the treatment of the specific disease of the instant claims, alopecia. Moreover, contrary to the Examiner’s assertion, Witten *et al.* does not teach that the bioactive analogs of substance P work either equivalently or more effectively than substance P. Rather, Witten *et al.* merely discloses that the bioactive analogs of substance P can be used to stimulate the immune system, which does no more than provide a motivation to experiment with analogs of substance P in general. However, it is well established that in the chemical and pharmaceutical arts, some specific guidance is required when a *prima facie* case of obviousness based on structural similarity is alleged. As such, because neither Li *et al.* nor Witten *et al.* provides specific guidance to select the bioactive analogs of substance P for use in treating alopecia, as presently claimed, a *prima facie* case of obviousness cannot be established. See *KSR*, 127 S.Ct. at 1742.

The Examiner further alleges that the combination of Li *et al.* and Pallenberg *et al.* teaches administration of substance P via aerosol delivery, as well as topical, transdermal, and subcutaneous routes for the treatment of hair loss. See Office Action at p. 5. However,

Li *et al.* and Pallenberg *et al.*, either alone or in combination, do not teach administration of bioactive analogs of substance P, as claimed by the presently pending claims. As such, the combination of cited references fails to teach or suggest all claim limitations. Therefore, for at least this reason, claims 6 and 8-10 are not obvious over Li *et al.* and Pallenberg *et al.*

Accordingly, withdrawal of this rejection under 35 U.S.C. § 103(a) is respectfully requested.

### **III. The Objection of Claims 3, 5-6, 7, 14-15 Should Be Withdrawn**

The PTO objects to claim 3 allegedly because the term “loss” should be spelled “lost”. Claim 3 is amended to correct the obvious typographical error.

The PTO objects to claims 5-6 allegedly because the term “bioactive analogue” has no antecedent basis, even if the meaning can be extrapolated to the term “bioactive analog” of claim 1. Claim 5 is canceled and claim 6 is amended to correct the term “bioactive analogue” to “bioactive analog”.

The PTO objects to claims 7 and 15 allegedly because the substance P analog has no antecedent basis. Claim 7 is amended to delete “substance P analog”, and claim 15 is canceled.

The PTO objects to claims 14 and 15 allegedly because the term “Substance P” has been capitalized, whereas in all other recitations it is in lower case. The objection is moot since claims 14 and 15 are canceled.

Accordingly, Applicants respectfully request withdrawal of the objections to the claims.

### **CONCLUSION**

In light of the above remarks, Applicants respectfully request that the PTO reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney at (650) 739-3949, if a telephone call could help resolve any issues.

Respectfully submitted,

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